UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,549	02/23/2004	Aiden Flanagan	01-162US2	7760

27774 7590 03/18/2009

MAYER & WILLIAMS PC
251 NORTH AVENUE WEST
2ND FLOOR
WESTFIELD, NJ 07090

EXAMINER	
ABOAGYE, MICHAEL	
ART UNIT	**PAPER NUMBER**
1793	

MAIL DATE	DELIVERY MODE
03/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/784,549	FLANAGAN, AIDEN	
	Examiner	Art Unit	
	MICHAEL ABOAGYE	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _24 December 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _48-69_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _48-69_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 48-65 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6696667 in view Hella et al. (US Patent No. 4,456811) and Freedenberg et al. (US Patent No. 5620618).

Although the conflicting claims are not identical, they are not patentably distinct from each other because they share the following common features. Laser cutting a tubular medical device generating a beam of radiation from a stationary radiation source; and directing the radiation beam onto the tubular workpiece by scanning the

radiation beam so that a prescribed pattern is cut in the tubular workpiece; and for at least a portion of time during which the radiation beam is being directed, redirecting the radiation beam generated by the station radiation source so that it is scanned about a circumference of the tubular workpiece without rotation of the tubular workpiece. The instant claims 48-65 require a scanning galvanometer a conical mirror having an aperture through which workpiece passes; U.S. Patent No. 6696667 uses pivoted scanning mirrors, but fails to teach a conical mirror with apex aperture in the optical path.

Hella et al. teaches a method of laser heat treating a surface of a tubular workpiece by providing in the optical path of the laser beam a conical mirror having an apex with an aperture through which the workpiece passes relative to the laser beam (see, conical mirror 15 of figures 1 and 2); wherein said conical mirror focuses or directs the laser beam in a form of annular or ring-shape beams to impinge or scan circumferentially on the outer surface or the tubular workpieces; wherein said laser beam impinges on the surface of the workpiece in non-overlapping and uniform manner with a predetermined width and energy profile thereby heat treating the surface to a uniform temperature and depth (Hella et al. (abstract , column 4, lines 5-25, column 4, lines 63-65, column 5, lines 37-645, and figures 1 and 2).

Though Hella et al.'s method is not directed to laser cutting, however Freedenberg et al. teaches laser machining as known in the art to encompass all types of material processing or removal, either partially or through the workpiece, including cutting, drilling, heating, heat treating, material deposition, and the like (Freedenberg et

al., column 12, lines 44-49). Therefore one of ordinary skill seeking to use laser beam to cut uniform diameter and uniformly spaced holes circumferentially and longitudinally along the surface of a tubular body would look to Hella et al. in view of the teachings of Freedenberg et al. since laser cutting and laser heat treatment are all laser machining techniques based on a common processing concept.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of U.S. Patent No. 6696667 with the concept of providing in the optical path of the laser beam a conical mirror having aperture at the apex as taught by Hella et al. so that the stent or workpiece can be moved relative to the laser beam by passing through the aperture of the conical mirror, thereby allowing holes of uniform diameter to be cut along the circumferential outer surface of the said workpiece. These claims 48-65 of the instant application is clearly coextensive with the scope of the claims 1-19 of U.S. Patent No. 6696667 as modified by the combination of Hella et al. Freedenberg et al.

Claims 66-69 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 U.S. Patent No. 6696667 in view of Freedenberg et al. (US Patent No. 5620618).

Although the conflicting claims are not identical, they are not patentably distinct from each other because they share the following common features. Laser cutting a tubular medical device generating a beam of radiation from a stationary radiation source; and directing the radiation beam onto the tubular workpiece by scanning the

radiation beam so that a prescribed pattern is cut in the tubular workpiece; and for at least a portion of time during which the radiation beam is being directed, redirecting the radiation beam generated by the station radiation source so that it is scanned about a circumference of the tubular workpiece without rotation of the tubular workpiece. The instant claims 66-69 require a scanning galvanometer, while U.S. Patent No. 6696667 uses pivoted scanning mirrors.

Freedenberg et al. teaches a laser machining process by providing a movable pivoted mirrors or lenses (column 7, lines 60-64) or a galvanometer (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67) for scanning the laser beam onto the surface of a workpiece.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of U.S. Patent No. 6696667 to use a galvanometer for scanning the laser beam as taught by Freedenberg et al. since pivoted mirrors or lenses and galvanometer alternative means known in the art for scanning laser beam, therefore substituting one alternative for the other would have only yielded a predictable result (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67). These claims 66-69 of instant application is clearly coextensive with the scope of the claims 1-19 of U.S. Patent No. 6696667 as modified by Freedenberg et al.

Claim Objections

2. Claim 66 is objected to because of the following informalities: In claim 66, line 7, replace "the station radiation source" with --the stationary radiation source--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 66-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Shapovalvo et al. (US Patent No. 6563080)

Regarding claim 66, Shapovalvo et al. teaches a method of manufacturing a medical device from a tubular workpiece (stent 247, figure 5) comprising: generating a beam of radiation from a stationary radiation source (abstract, and column 7, lines 46-50) (Note Shapovalvo et al. in column 4, lines 27-32 , teaches laser beam that moves relative to the stent or the stent moves relative to the laser beam from a source that is stationary) and directing the radiation beam onto the tubular workpiece (column 6, lines 13-14; claim 2) so that a prescribed pattern is cut in the tubular workpiece; and for at least a portion of time during which the radiation beam is being directed (see, figure 5, column 2, lines 11-16 and column 7, lines 46-62).

Shapovalvo et al. also teaches redirecting the radiation beam generated by the station radiation source so that it is scanned about a circumference of the tubular workpiece without rotation of the tubular workpiece (see, column 3, lines 29-40). (Note Shapovalvo et al. teaches a set of pivoted scanning mirrors which direct and redirect the laser beam generated from the laser source so that it is scanned over the circumferential surface or the workpiece (see, figure 5 and column 3, lines 29-40, and column 7, lines 46-57).

Regarding claim 67, Shapovalvo et al. in figure 5 shows a scanned radiation beam within a planar scan area (circumferential surface of the stent), wherein the beam is incident at a 90° angle at the surface of the stent (note the laser beam impinges on the surface of the workpiece at an angle of 90 degrees).

Regarding claim 68, Shapovalvo et al. teaches a stent which is tubular (column, lines 13-14) and planar scan area that is perpendicular to a longitudinal axis of the tubular workpiece (figure 5).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 48-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapovalvo et al. (US Patent No. 6563080) in view of Hella et al. (US Patent No. 4,456811) and Freedenberg et al. (US Patent No. 5620618).

Regarding claim 48, Shapovalvo et al. teaches a method of manufacturing a medical device (stent) from a workpiece, comprising: generating a beam of radiation from a radiation source (abstract, and column 7, lines 46-50); and directing the radiation beam (45a, figure 5 and column 7, lines 46-50) onto the workpiece (stent 247, figure 5, abstract, column 5, lines 39-47 and column 7, lines 59-62) by scanning the radiation beam so that a prescribed pattern is cut in the workpiece (note by the multiple mirrors 212, 214, 205, 215 and 220, the laser beam 4a is scanned multiple times and a prescribed pattern is directed to the workpiece 241, see, figure 5 and column 7, lines 52-57).

Shapovalvo et al. teaches that the laser beam moves relative to the stent or the stent moves relative to the laser beam (column 4, lines 27-32), but fails to teach providing a conical mirror having an apex with an aperture through which the workpiece passes relative to the laser beam.

Hella et al. teaches a method of laser heat treating a surface of a tubular workpiece by providing in the optical path of the laser beam a conical mirror having an apex with an aperture through which the workpiece passes relative to the laser beam (see, conical mirror 15 of figures 1 and 2); wherein said conical mirror focuses or directs the laser beam in a form of annular or ring-shape beams to impinge or scan circumferentially on the outer surface or the tubular workpieces; wherein said laser

beam impinges on the surface of the workpiece in non-overlapping and uniform manner with a predetermined width and energy profile thereby heat treating the surface to a uniform temperature and depth (Hella et al. (abstract , column 4, lines 5-25, column 4, lines 63-65, column 5, lines 37-645, and figures 1 and 2).

Though Hella et al.'s method is not directed to laser cutting, however Freedenberg et al. teaches laser machining as known in the art to encompass all types of material processing or removal, either partially or through the workpiece, including cutting, drilling, heating, heat treating, material deposition, and the like (Freedenberg et al., column 12, lines 44-49). Therefore one of ordinary skill seeking to use laser beam to cut uniform diameter and uniformly spaced holes circumferentially and longitudinally along the surface of a tubular body would look to Hella et al. in view of the teachings of Freedenberg et al. since laser cutting and laser heat treatment are all laser machining techniques based on a common processing concept.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Shapovalvo et al. with the concept of providing in the optical path of the laser beam a conical mirror having aperture at the apex as taught by Hella et al. so that the stent or workpiece can be moved relative to the laser beam by passing through the aperture of the conical mirror, thereby allowing holes of uniform diameter to be cut along the circumferential outer surface of the said workpiece.

Regarding claims 49, and 51, both Shapovalvo et al. and Hella et al. teach radiation or laser beam scanned within a planar scan area throughout which the beam

is incident at a 90° angle; wherein the planar scan area is perpendicular to a longitudinal axis of the tubular workpiece (in figure 5, Shapovalvo et al. shows a portion of the scan beam incident at a 90° angle to the surface of the stent (247), Figure 2 of Hella at al. also shows a portion of the scan beam incident at a 90° angle to the surface of the tube (10)).

Regarding claim 50, both Shapovalvo et al. and Hella et al. disclose a tubular work piece (Shapovalvo et al., stent (247), figure 5 and column 2, lines 40-45; Hella et al. shaft (10), figures 1 and 2)).

Regarding claims 52 and 53, Shapovalvo et al. and Hella et al. individually teach scanning or sweeping the laser beam over the surface of the workpiece a optical device (see, the multiple mirrors 212, 214, 205, 215 and 220 pivoted in multiple axis, figure 5 of Shapovalvo et al.; Hella et al., column 2, lines 10-40 and column 4, line 1-12). Shapovalvo et al. and Hella et al. combined are silent on scanning with a galvanometer.

Freedenberg et al. teaches a laser machining process by providing pivoted and movable mirrors or lenses (column 7, lines 60-64) or a galvanometer (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67) for scanning the laser or radiation beam.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined invention of Shapovalvo et al. and Hella et al. to use a galvanometer for scanning the leaser beam as taught by Freedenberg et al. since an

assembly of movable pivoted mirrors or lenses and galvanometer are known alternative laser or radiation scanners known in the art, therefore substituting one alternative for the other would have only yielded a predictable result (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67).

Regarding claim 54, Shapovalvo et al., teaches positioning at least one optical element along an optical path between the radiation source and the workpiece (see, the lenses 240 placed between the radiation source and the workpiece (247), figure 5 and column 7, lines 46-67).

Regarding claims 57 and 58, Shapovalvo et al., teaches a workpiece (stent 247) made of stainless steel which is biocompatible (see, column 4, lines 15-18)

Regarding claims 59 and 60, Shapovalvo et al., teaches workpiece comprising medical device such as stent or catheter (abstract, column 1, lines 15-20 and column 5, lines 39-45).

Regarding claim 61 Shapovalvo et al., teaches workpiece is translated along its longitudinal axis during the step of directing the radiation beam (see, in figure 5 the stent 247 is moved along it's longitudinal axis as the laser beam is directed onto it's surface, also see, column 4, lines 27-32).

Regarding claim 62 Shapovalvo et al., teaches tubular workpiece (stent 247, figure 5) is rotated about its longitudinal axis during the step of directing the radiation beam (see, column 40-47).

Regarding claim 63, Shapovalvo et al., Hella et al. and Freedenberg et al. either in taken separately or in combination teach laser beam as indicated above.

Regarding claim 64, Shapovalvo et al. teaches pulsed laser beam (column 2, lines 22-22 and lines 59-67).

Regarding claim 65, Hella et al. teaches a conical mirror which provides a circumferential or ring-like laser to incident on the workpiece; Freedenberg et al., teaches scanning galvanometer which provides multipass scanning, Shapovalvo et al. teaches laser beam for removing material from the workpiece (stent). The combined teaching of Shapovalvo et al., Hella et al. and Freedenberg et al. therefore meet the process limitation set forth in this claim.

Regarding claims 55 and 56, Shapovalvo et al., Hella et al. fail to teach providing in the optical path a flat field telecentric lens (F-theta lens) prior to impinging on the workpiece.

Freedenberg et al. teaches a laser machining process by providing in the optical path a flat field telecentric lens (F-theta lens) prior to impinging on the workpiece; wherein said F-theta lens focuses the beam in a flat focal plane prior to impinging on the workpiece (Freedenberg et al., column 3, lines 55-67 and column 12, lines 23-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined invention of Shapovalvo et al. and Hella et al. to provide flat field telecentric lens in the optical path prior to impinging on the workpiece as taught by Freedenberg et al. so that holes of straight walls can be drilled while holes with tilted or angle edges walls prevented (Freedenberg et al., column 12, lines 25-29).

7. Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shapovalvo et al. (US Patent No. 6563080) as applied to claim 66 above and further in view of and Freedenberg et al. (US Patent No. 5620618).

Shapovalvo et al. teaches scanning or sweeping the laser beam over the surface of the workpiece and optical device (see, the multiple mirrors 212, 214, 205, 215 and 220 pivoted in multiple axis, figure 5 of Shapovalvo et al.). However Shapovalvo et al.) is silent on scanning with a galvanometer.

Freedenberg et al. teaches a laser machining process by providing a movable pivoted mirrors or lenses (column 7, lines 60-64) or a galvanometer (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67) for scanning the laser beam onto the surface of a workpiece.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Shapovalvo et al. to use a galvanometer for scanning the laser beam as taught by Freedenberg et al. since pivoted mirrors or lenses and galvanometer alternative means of scanning laser beam known in the art, therefore substituting one alternative for the other would have only yielded a predictable result (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67).

8. Claims 48-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior ART (AAPA), (Applicant's Specification, page I and figure 1) in view of Hella et al. (US Patent No. 4,456811) and Freedenberg et al. (US Patent No. 5620618).

Regarding claim 48, AAPA teaches a method of manufacturing a medical device from a workpiece, comprising: generating a beam of radiation from a radiation source; and directing the radiation beam onto the workpiece by impinging the radiation beam so that a prescribed pattern is cut in the workpiece (see, Applicant's specification, page 1 and figure 1).

AAPA though teaches said radiation impinging against the workpiece, but is silent on scanning. AAPA also fails to teach providing a conical mirror having an apex with an aperture through which the workpiece passes relative to the laser beam.

Hella et al. teaches a method of laser heat treating a surface of a tubular workpiece by providing in the optical path of the laser beam a conical mirror having an apex with an aperture through which the workpiece passes relative to the laser beam (see, conical mirror 15 of figures 1 and 2); wherein said conical mirror focuses or directs the laser beam in a form of annular or ring-shape beams to impinge or scan circumferentially on the outer surface or the tubular workpieces; wherein said laser beam impinges on the surface of the workpiece in non-overlapping and uniform manner with a predetermined width and energy profile thereby heat treating the surface to a uniform temperature and depth (Hella et al. - abstract , column 4, lines 5-25, column 4, lines 63-65, column 5, lines 37-645, and figures 1 and 2).

Though Hella et al.'s method is not directed to laser cutting, however Freedenberg et al. teaches laser machining as known in the art to encompass all types of material processing or removal, either partially or through the workpiece, including cutting, drilling, heating, heat treating, material deposition, and the like (Freedenberg et

al., column 12, lines 44-49). Therefore one of ordinary skill seeking to use laser beam to cut uniform diameter and uniformly spaced holes circumferentially and longitudinally along the surface of a tubular body would look to Hella et al. in view of the teachings of Freedenberg et al. since laser cutting and laser heat treatment are all laser machining techniques based on a common processing concept. Freedenberg et al. placing a scanning galvanometer in the optical path which will allow the laser beam to be redirected and thereby enabling the circumferential surface of the workpiece to be scanned.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of AAPA with the concept of providing in the optical path of the laser beam a conical mirror having aperture at the apex as taught by Hella et al. so that the stent or workpiece can be moved relative to the laser beam by passing through the aperture of the conical mirror, thereby allowing holes of uniform diameter to be cut along the circumferential outer surface of the said workpiece.

Regarding claims 49 and 51, Freedenberg et al. teaches a means for scanning the laser beam; AAPA (figure 1) and Hella et al. (figure 1) individually teaches wherein the radiation beam incident at a 90° angle within a planar area of the workpiece and along the longitudinal axis of the tubular workpiece. Therefore the combination of AAPA, Hella et al. and Freedenberg et al. meet the claim limitation

Regarding claim 50, both AAPA (the stent, figure 1 and specification, page 1) and Hella et al. disclose a tubular work piece shaft (10), figures 1 and 2).

Regarding claims 52 and 53, AAPA and Hella et al. combined are silent on scanning with a galvanometer.

Freedenberg et al. teaches a laser machining process by providing pivoted and movable mirrors or lenses (column 7, lines 60-64) or a galvanometer (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67) for scanning the laser or radiation beam.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined invention of AAPA and Hella et al. to use a galvanometer for scanning the leaser beam as taught by Freedenberg et al. since an assembly of movable pivoted mirrors or lenses and galvanometer are known alternative laser or radiation scanners known in the art, therefore substituting one alternative for the other would have only yielded a predictable result (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67).

Regarding claim 54, AAPA teaches positioning at least one optical element (104, figure 1) along an optical path between the radiation source and the workpiece (se, Applicant's specification page 1).

Regarding claims 57 and 58, AAPA, teaches a workpiece (stent) made of stainless steel which is biocompatible (see, Applicant's Specification page 1).

Regarding claims 59 and 60, AAPA teaches workpiece comprising medical device such as stent or catheter (see, Applicant's Specification page 1).

Regarding claim 61, AAPA, teaches workpiece is translated along its longitudinal axis during the step of directing the radiation beam (AAPA, figure 1 and Applicant's Specification page 1).

Regarding claim 62, AAPA teaches tubular workpiece is rotated about its longitudinal axis during the step of directing the radiation beam (AAPA, figure 1 and Applicant's Specification page 1).

Regarding claim 63, AAPA, Hella et al. and Freedenberg et al. either in taken separately or in combination teach laser beam as indicated above.

Regarding claim 64, AAPA teaches pulsed laser beam (Applicant's Specification page 1).

Regarding claim 65, Hella et al. teaches a conical mirror which provides a circumferential or ring-like laser to incident on the workpiece; Freedenberg et al., teaches scanning galvanometer which provides multipass scanning, AAPA teaches laser beam for removing material from the workpiece (stent). The combined teaching of AAPA, Hella et al. and Freedenberg et al. therefore meet the process limitation set forth in this claim.

Regarding claims 55 and 56, AAPA and Hella et al. fail to teach providing in the optical path a flat field telecentric lens (F-theta lens) prior to impinging on the workpiece.

Freedenberg et al. teaches a laser machining process by providing in the optical path a flat field telecentric lens (F-theta lens) prior to impinging on the workpiece; wherein said F-theta lens focuses the beam in a flat focal plane prior to impinging on the workpiece (Freedenberg et al., column 3, lines 55-67 and column 12, lines 23-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined invention of AAPA and Hella et al. to provide flat field telecentric lens in the optical path prior to impinging on the workpiece as taught by Freedenberg et al. so that holes of straight walls can be drilled while holes with tilted or angle edges walls prevented (Freedenberg et al., column 12, lines 25-29).

9. Claims 66-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior ART (AAPA), (Applicant's Specification, page I and figure 1) in view of Freedenberg et al. (US Patent No. 5620618).

Regarding claims 66 and 69, AAPA teaches a method of manufacturing a medical device from a workpiece, comprising: generating a beam of radiation from a radiation source; and directing the radiation beam onto the workpiece by impinging the radiation beam so that a prescribed pattern is cut in the workpiece (see, Applicant's specification, page 1 and figure 1).

AAPA though teaches said radiation impinging against the workpiece, but is silent on scanning.

Freedenberg et al. teaches placing a scanning galvanometer in the optical path which will allow the laser beam to be redirected and thereby enabling the circumferential surface of the workpiece to be scanned (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of AAPA to placing a scanning galvanometer in the

optical path as taught Freedenberg et al. allow the laser beam to redirected and thereby enabling the circumferential surface of the workpiece to be scanned (Freedenberg et al., column 10, lines 11-28, column 11, lines 10-15, and column 59-67).

Regarding claims 67 and 68, Freedenberg et al. teaches a means for scanning the laser beam; AAPA (figure 1) teaches wherein the radiation beam incident at a 90° angle within a planar area of the workpiece and along the longitudinal axis of the tubular workpiece. Therefore the combination of AAPA and Freedenberg et al. meet the claim limitation.

Response to Arguments

10. Applicant's arguments with respect to claim 48-65 have been considered but are moot in view of the new ground(s) of rejection. The main focus of the applicant's argument was that none of the prior art used in the prior rejection fail to teach show or suggest a conical mirror having an apex with an aperture through which the workpiece passes.

The examiner agrees that neither Shapovalov et al., Freedenburg et al. nor (Weerasinghe et al. and Pressler, these reference are not applicable in the instant office action), however said argument is moot in view of the new grounds of rejection based on the newly applied reference to Hella et al.. Though Hella et al.'s method is not directed to laser cutting, however Freedenberg et al. teaches laser machining as known in the art to encompass all types of material processing or removal, either partially or through the workpiece, including cutting, drilling, heating, heat treating, material

deposition , and the like (Freedenberg et al., column 12, lines 44-49). Therefore one of ordinary skill seeking to use laser beam to cut uniform diameter and uniformly spaced holes circumferentially and longitudinally along the surface of a tubular body would look to Hella et al. in view of the teachings of Freedenberg et al. since laser cutting and laser heat treatment are all laser machining technique based on a common processing concept.

Regarding claim 66, applicant asserts that claim as amended recites that the beam of radiation is generated by a stationary radiation source. Accordingly, claim 66 now sets forth that the radiation beam is scanned about the circumference of the tubular workpiece while the radiation source remains stationary and without rotation of the tubular workpiece. As the Examiner notes, the arrangement formed from the combination of Shapovalov et al., Freedenburg et al. and Weerasinghe et al. requires rotation of the laser beam. (Note, Weerasinghe et al. is not applicable in the instant office action).

The examiner disagrees. Though Shapovalov et al., teaches that either the stent or the laser may be rotated and at the same time move longitudinally. Shapovalov et al., also provides the teaching wherein stent and the laser beam may be move longitudinally without rotating (column 5, lines 39-47 and column 4, lines 25-33). Regardless the new reference to Hella et al. teaches a process in which the laser beam is not rotated.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. A./
Examiner, Art Unit 1793

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793